



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892 788	06/28/2001	Kenichi Nishikawa	040894-5685	9631

9629 7590 06/18/2003

MORGAN LEWIS & BOCKIUS LLP  
1111 PENNSYLVANIA AVENUE NW  
WASHINGTON, DC 20004

EXAMINER

ROY, SIKHA

ART UNIT PAPER NUMBER

2879

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/892,788

Applicant(s)

NISHIKAWA, KENICHI

Examiner

Sikha Roy

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 12-16 is/are allowed.
- 6) ☐ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) 7-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application):
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5, 1
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The Amendment, filed on March 31, 2003 has been entered and overcomes the rejection of claims 1-11, under 35 U.S.C. § 112, second paragraph.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0959542 A1 to Sugimoto et al. in view of U. S Patent 6,114,054 to Klein et al.

Sugimoto et al. disclose (page 11 line 29, Fig.3) a spark plug comprising of an insulator with a glaze layer 2d formed on the surface. Sugimoto et al. further disclose (page 2 line 42,43, page 4 lines 30,31) that the amount of Pb contained in the glaze is remarkably reduced to 1% by weight or less as reduced to PbO.

Claim 1 differs from Sugimoto et al. in that Sugimoto et al. do not exemplify a marking layer formed on the insulator underneath the glaze layer so that the marking layer can be seen through the glaze layer.

Klein et al. in relevant art of coloring ceramic surfaces disclose (column 1 lines 66,67, column 2 lines 1-5) a marking layer (pigment layer) applied to the ceramic body and subsequently coated with a glaze. It is to be noted that this marking layer can be used for marking or applying color pattern for decoration of the ceramic object.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include a marking layer on the ceramic insulator surface subsequently coated with glaze layer as suggested by Klein et al. of the spark plug of Sugimoto et al. for marking or applying color pattern for decoration purpose.

Regarding claim 1, Sugimoto and Klein disclose the claimed invention except for the limitation of the tint of the marking layer seen through the glaze layer having particular value in brightness and chroma as specified by 1993 JIS: Z8721. The applicant's admitted prior art discloses (page 3 lines 8-20) that a coloring metallic oxide composing a pigment in the marking layer reacts with glaze layer while baking the glaze. This results in change in brightness and chroma of the tint of the marking layer. Furthermore applicant discloses that tint inherent in the coloring metallic oxide of the marking layer is maintained when the glaze layer contains Pb and it is difficult to adjust the tint otherwise for the glaze layer with a very small amount of Pb. Hence the brightness and chroma of marking layer seen through the glaze layer inherently change with the composition of the glaze layer and the marking layer.

It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to specify the tint of the marking layer seen through the glaze layer, 3 or less in brightness as well as 3 or less in chroma as specified by 1993 JIS: Z 8721 or 4 or less in brightness as well as 2 or less in chroma as specified by 1993 JIS: Z 8721, since discovering an optimum value of a result variable is considered within the skills of the art.

Regarding claim 2 Sugimoto et al. disclose (page 7 line 43) the glaze layer further comprises Zn component.

Regarding claim 3 Sugimoto et al. disclose (page 15, Table 1) Zn present in the glaze layer in an amount of 21 mol.% as reduced to ZnO. Sugimoto et al. disclose (page 7 line 43) Zn present in the glaze layer in an amount of 10-25% by weight (12-30 mol%) as reduced to ZnO.

Regarding claims 4,5 and 6 Klein et al. disclose (column 1 lines 16-19) the pigments used in the marking layer comprise colored oxides of iron, chromium, manganese.

#### ***Allowable Subject Matter***

Claims 12-16 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

Regarding claim 12, the references of the Prior Art of record fails to teach or suggest a spark plug with the combination of the limitations as set forth in claim 12, and specifically the limitation of marking layer comprising 30 to 60 mass% of an Fe component in terms of  $\text{Fe}_2\text{O}_3$  and 10 to 40 mass % of a Cr component in terms of  $\text{Cr}_2\text{O}_3$ .

Claims 13-16 are allowable for the reasons given in claim 12 because of their dependency status from claim 12.

Claims 7-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 7 the references of the Prior Art of record fails to teach or suggest a spark plug with the combination of the limitations as set forth in claim 7, and specifically the limitation of the marking layer comprising 30 to 60 mass% of an Fe component in terms of  $\text{Fe}_2\text{O}_3$  and 10 to 40 mass % of a Cr component in terms of  $\text{Cr}_2\text{O}_3$ .

Claim 8 would be allowable being dependent on the claim 7.

Regarding claim 9 the references of the Prior Art of record fails to teach or suggest a spark plug with the combination of the limitations as set forth in claim 9, and specifically the limitation of the marking layer comprising 10 to 40 mass% of a Co component in terms of  $\text{CoO}$ .

Regarding claim 10 the references of the Prior Art of record fails to teach or suggest a spark plug with the combination of the limitations as set forth in claim 10, and specifically the limitation of the marking layer comprising 0.5 to 15 mass% of a Ni component in terms of  $\text{Ni}_2\text{O}_3$ .

Regarding claim 11 the references of the Prior Art of record fails to teach or suggest a spark plug with the combination of the limitations as set forth in claim 11, and specifically the limitation of the marking layer comprising 0.5 to 15 mass% in total of at

Art Unit: 2879

least one of an Al component and a Ba component, the Al component being in terms of  $\text{Al}_2\text{O}_3$  and the Ba component in terms of BaO.

### ***Response to Arguments***

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

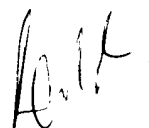
### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SR  
Sikha Roy  
Patent Examiner  
Art Unit 2879

  
Nimeshkumar D. Patel  
Supervisor  
Art Unit 2879